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EXAMINER	
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9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/866,596	RAJAN, JEBU JACOB
	Examiner	Art Unit
	Huyen Vo	2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on ~~10 May 2001~~ 6/29/01.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-55 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-55 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 10 May 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless – (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 48-50 are rejected under 35 U.S.C. 102(e) as being anticipated by Sewall et al. (US Patent No. 6708146).

1. Regarding claim 48, Sewall et al. disclose an apparatus for determining sets of parameter values representative of an input speech signal, the apparatus comprising:

means for receiving a plurality of speech signal values representative of an input speech signal (10 of figures 5-6);

means for dividing the plurality of speech signal values into a succession of groups of speech signal values (col. 16, ln. 5-10 or referring to figure 38); and

means for determining a set of parameter values representative of the speech signal values in each group (see figures 5-6, autocorrelation and power estimator);

wherein the determining means comprises means for varying the number of parameter values used to represent the speech signal values in each group (col. 11, ln. 11-17).

2. Regarding claim 49, Sewall et al. disclose an apparatus for determining sets of parameter values representative of an input speech signal, the apparatus comprising:

means for receiving a plurality of speech signal values representative of an input speech signal (10 of figures 5-6);

means for dividing a plurality of speech signal values into a succession of groups of speech signal values (col. 16, ln. 5-10 or referring to figure 38); and

means for processing the speech signal values in each group to determine a set of parameter values representative of the speech signal values in the group (see figures 5-6, autocorrelation and power estimator);

wherein said processing means comprises:

a memory for storing data defining a predetermined function which gives, for a set of speech signal values of a group, a probability density for parameters of a predetermined signal model which is assumed to have generated the speech signal values in the group, the probability density defining, for a given set of parameter values, the probability that the predetermined signal model has those parameter values, given that the model is assumed to have generated the speech signal values in the group (32 of figures 5-6);

means for applying the set of speech signal values of a current group to the stored function to give the probability density for the model parameters for the current group (col. 15, ln. 6-25);

means for processing the function to derive samples of parameter values from the probability density for the current group (col. 15, ln. 6-25);

means for evaluating the probability density for the current group using one or more of the derived samples of parameter values for different numbers of parameter values to determine respective probabilities that the predetermined signal model has those parameter values (col. 15, ln. 6-25); and

means for processing at least some of the derived samples of parameter values and the evaluated probabilities to determine model parameters that are representative of the set of signal values in the current group (col. 15, ln. 23-25, by sorting according to the probability).

3. Regarding claim 50, Sewall et al. disclose audio comparison apparatus comprising:

a memory for storing a predetermined function which gives, for a given set of audio signal values, a probability density for parameters of a predetermined audio model which is assumed to have generated the set of audio signal values, the probability density defining, for a given set of model parameter values, the probability that the predetermined audio model has those parameter values,

given that the model is assumed to have generated the set of audio signal values (32 of figures 5-6);

means for receiving a set of audio signal values representative of an input audio signal (10 of figures 4-5);

means for applying the set of received audio signal values to the stored function to give the probability density for the model parameters for the set of received audio signal values (col. 15, ln. 6-25);

means for processing for function, with the set of received audio signal values applied, to derive samples of parameter values from the probability density (col. 15, ln. 6-25);

means for analysing at least some of the derived samples of parameter values to determine parameter values that are representative of the set of received audio signal values (col. 15, ln. 6-25); and

means for comparing the determined parameter values with pre-stored parameter values to generate a comparison result (col. 15, ln. 53-67, inherently indicate a comparison process).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 51-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sewall et al. (US Patent No. 6708146).

4. Regarding claims 51-53, Sewall et al. fail to specifically disclose a speech recognition system, speaker verification system, and an acoustic classification system comprising an audio comparison apparatus according to claim 50. However, it would have been obvious to one of ordinary skill in the at the time of invention to readily realize that the method of claim 50 as disclosed in Sewall et al. be implemented in speech recognition systems, or speaker verification systems, or acoustic classification systems in order to enhance reliabilities in these systems.

Claims 1-3, 6-7, 9-11, 14-17, 20-25, 28-29, 31-33, 36-39, 42-47, and 54-55 rejected under 35 U.S.C. 103(a) as being unpatentable over Sewall et al. (US Patent No. 6708146) in view of Pastor et al. (US Patent No. 6438513).

5. Regarding claim 1, Sewall et al. disclose a speech processing apparatus comprising:

means for receiving a set of signal values representative of a speech signal generated by a speech source as distorted by a transmission channel between the speech source and the receiving means (10 of figures 5-6 and col. 11, ln. 11-17),

a memory for storing data defining a predetermined function derived from a predetermined signal model (32 of figures 5-6) which includes a first part having first parameters which models the source, and the function being in terms of a set of signal values (col. 13, ln. 13-36),

means for applying the set of received signal values to stored function (col. 15, ln. 6-25), and

Sewall et al. fail to specifically disclose that the storing data includes a second part having second parameters which models the channel and the function being in terms of the first and second parameters, and means for processing the function with those values applied to obtain values of the first parameters that are representative of the speech generated by the speech source before it was distorted by the transmission channel.

However, Pastor et al. teach that the storing data includes a second part having second parameters which models the channel and the function being in terms of the first and second parameters (col. 3, ln. 39-67, that is the noise model introduced by the transmission channel), and means for processing the function with those values applied to obtain values of the first parameters that are representative of the speech generated by the speech source before it was distorted by the transmission channel (col. 3, ln. 58 to col. 4, ln. 11). The advantage of using the teaching of Pastor et al. in Sewall et al. is to remove noise introduced to the signal by the transmission channel to enhance speech detection accuracy.

Since Sewall et al. and Pastor et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Sewall et al. by incorporating the teaching of Pastor et al. in order to remove noise introduced to the signal by the transmission channel to enhance speech detection accuracy.

6. Regarding claims 23 and 45, Sewall et al. disclose a speech processing method and apparatus comprising the steps of:

receiving a set of signal values representative of a speech signal generated by a speech source as modified by a transmission channel between the speech source and the receiver (10 of figures 5-6 and col. 11, ln. 11-17);

storing data defining a predetermined function derived from a predetermined signal model which includes a first part having first parameters which models the source (32 of figures 5-6 or col. 13, ln. 13-36, training models), and the function being in terms of the first and second parameters and generating, for a given set of signal values, a probability density function which defines, for a given set of first parameters and second parameters, the probability that the predetermined signal model has those parameter values, given that the signal model is assumed to have generated the received set of signal values (col. 11, ln. 11-17 and col. 16, ln. 11-43);

applying the set of received signal values to said function (col. 13, ln. 13-36);

processing the function with those values applied to derive samples of at least said first parameters from the probability density function (col. 15, ln. 6-25);

Sewall et al. fail to specifically disclose that the storing data includes a second part having second parameters which models the channel and means for analysing at least some of the derived samples to determine values of the first parameters that are representative of the speech signal generated by the source before it was modified by the transmission channel.

However, Pastor et al. teach that the storing data includes a second part having second parameters which models the channel and the function being in terms of the first and second parameters (col. 3, ln. 39-67, noise models), and means for analysing at least some of the derived samples to determine values of the first parameters that are representative of the speech signal generated by the source before it was modified by the transmission channel (col. 3, ln. 58 to col. 4, ln. 11). The advantage of using the teaching of Pastor et al. in Sewall et al. is to remove noise introduced to the signal by the transmission channel to enhance speech detection accuracy.

Since Sewall et al. and Pastor et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Sewall et al. by incorporating the teaching of Pastor et al. in order to remove noise introduced to the signal by the transmission channel to enhance speech detection accuracy.

7. Regarding claim 46, Sewall et al. disclose a speech processing apparatus comprising:

means for receiving a set of signal values representative of a speech signal generated by a speech source as distorted by a transmission channel between the speech source and the receiving means (10 of figures 5-6 and col. 11, ln. 11-17);

a memory for storing data defining a predetermined function derived from a predetermined signal model which includes a first part having first parameters which models the source (col. 13, ln. 13-36, training models), the function being in terms of the first and second parameters and being in terms of a set of raw speech signal values representative of speech generated by the source before being distorted by the transmission channel (col. 11, ln. 11-17 and col. 16, ln. 11-43);

means for processing the received set of signal values with initial estimates of first and second parameters, to generate an estimate of the raw speech signal values corresponding to the received set of signal values (figures 4-6, power estimator);

means for applying the set of received signal values and the estimated set of raw speech signal values to the function (col. 15, ln, 6-25);

Sewall et al. fail to specifically disclose that the storing data includes a second part having second parameters which models the channel and the function being in terms of the first and second parameters, and means for processing the function with those values applied to obtain values of the first

parameters that are representative of the speech signal generated by the speech source before it was distorted by the transmission channel.

However, Pastor et al. teach that the storing data includes a second part having second parameters which models the channel and the function being in terms of the first and second parameters (col. 3, ln. 39-67, noise models), and means for processing the function with those values applied to obtain values of the first parameters that are representative of the speech signal generated by the speech source before it was distorted by the transmission channel (col. 3, ln. 58 to col. 4, ln. 11). The advantage of using the teaching of Pastor et al. in Sewall et al. is to remove noise introduced to the signal by the transmission channel to enhance speech detection accuracy.

Since Sewall et al. and Pastor et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Sewall et al. by incorporating the teaching of Pastor et al. in order to remove noise introduced to the signal by the transmission channel to enhance speech detection accuracy.

8. Regarding claim 47, Sewall et al. disclose a speech processing apparatus comprising:

means for receiving a set of signal values representative of a speech signal generated by a speech source as modified by a transmission channel between the signal source and the receiving means (10 of figures 5-6 and col. 11, ln. 11-17);

a memory for storing data defining a predetermined function derived from a predetermined signal model which includes a first part having first parameters which models said source (32 of figures 5-6), and the function being in terms of the first and second parameters and being in terms of a set of raw speech signal values representative of a speech signal generated by the source before being modified by the transmission channel (col. 11, ln. 11-17 and col. 16, ln. 11-43), the function generating, for a given set of signal values, a probability density function which defines, for a given set of first parameters, second parameters and raw speech signal values, the probability that the predetermined signal model has those parameter values and generates raw speech signal values, given that the signal model is assumed to have generated the received set of signal values (32 of figures 5-6 and col. 13, ln. 13-16);

means for processing the received set of signal values with initial estimates of the first and second parameters, to generate an estimate of the set of raw speech signal values corresponding to the received set of signal values (figures 4-5, the power estimator);

means for applying set of received signal values and the estimated set of raw speech signal values to the function (figures 4-5 and col. 15, ln. 6-26);

means for processing the function with those values applied to derive samples of at least the first parameters from the probability density function (figures 4-5 and col. 15, ln. 6-26); and

means for analysing at least some of said derived samples to determine values of the first parameters that are representative of the speech signal (col. 15, ln. 6-25).

Sewall et al. fail to specifically disclose that the storing data includes a second part having second parameters which models the channel and means for analysing at least some of the derived samples to determine values of the first parameters that are representative of the speech signal generated by the source before it was modified by the transmission channel.

However, Pastor et al. teach that the storing data includes a second part having second parameters which models the channel and the function being in terms of the first and second parameters (col. 3, ln. 39-67, that is the noise model introduced by the transmission channel), and means for analysing at least some of the derived samples to determine values of the first parameters that are representative of the speech signal generated by the source before it was modified by the transmission channel (col. 3, ln. 58 to col. 4, ln. 11). The advantage of using the teaching of Pastor et al. in Sewall et al. is to remove noise introduced to the signal by the transmission channel to enhance speech detection accuracy.

Since Sewall et al. and Pastor et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Sewall et al. by incorporating the teaching of Pastor et al. in order to remove noise introduced to the signal by the transmission channel to enhance speech detection accuracy.

9. Regarding claims 2 and 24, Sewall et al. further disclose that the function generates, for a given set of received signal values, a probability density function which defines, for a given set of first and second parameters, the probability that the predetermined signal model has those parameter values, given that the signal model is assumed to have generated the received set of signal values and wherein the processing means comprises means for drawing samples from the probability density function and means for determining the values of the first parameters that are representative of the speech from the drawn samples (col. 13, ln. 13-36 or col. 15, ln. 6-25).

10. Regarding claims 3 and 25, Sewall et al. further disclose means for evaluating the probability density function for the set of received signal values using one or more of the drawn samples or parameter values for different numbers of parameter values, to determine respective probabilities that the predetermined signal model has those parameter values (col. 13, ln. 13-16, by consulting the pdf information). Sewall et al. fail to specifically disclose that the processing means is operable to process at least some of drawn samples of parameter values and evaluated probabilities to determine values of the first parameters that are representative of the speech generated by the source before it was distorted by the transmission channel.

However, Pastor et al. further teach that the processing means is operable to process at least some of drawn samples of parameter values and evaluated

probabilities to determine values of the first parameters that are representative of the speech generated by the source before it was distorted by the transmission channel (referring to figure 1, noise model is selected, processed, and applied to remove noise from the signal). The advantage of using the teaching of Pastor et al. in the Sewall et al. is to remove noise from the signal to improve speech detection accuracy.

Since Sewall et al. and Pastor et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to further modify Sewall et al. by incorporating the teaching of Pastor et al. in order to remove noise from the signal to improve speech detection accuracy.

11. Regarding claims 6 and 28, Sewall et al. further disclose that the drawing means is operable to draw samples iteratively from the probability density function (col. 16, ln. 11-43).

12. Regarding claims 7 and 29, Sewall et al. further disclose that the sampling means is operable to draw samples of the first parameters (col. 15, ln. 6-25). Sewall et al. fail to specifically disclose means for drawing samples of the second parameters. However, Pastor et al. further teach means for drawing samples of the second parameters (col. 3, ln. 32-67, searching and retrieving the noise model used to denoise the input signal). The advantage of using the teaching of

Pastor et al. in Sewall et al. is to enable the system to analyze and minimize the transmission channel distortion to improve system's efficiencies.

Since Sewall et al. and Pastor et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to further modify Sewall et al. by incorporating the teaching of Pastor et al. in order to enable the system to analyze and minimize the transmission channel distortion to improve system's efficiencies.

13. Regarding claims 9 and 31, Sewall et al. further disclose that the processing means comprises means for analysing at least some of the drawn samples of parameter values to determine a measure of the variance of the samples (col. 6, ln. 44-67) and the apparatus further comprises means for outputting a signal indicative of the quality of the received set of signal values in dependence upon the determined variance measure (col. 9, ln. 16-48).

14. Regarding claims 10 and 32, Sewall et al. further disclose that the probability density function is in terms of the variance measure (col. 7, ln. 1-7) and wherein the analysing means is operable to draw samples of the variance measure from the probability density function (col. 15, ln. 6-25).

15. Regarding claims 11 and 33, Sewall et al. further disclose that the function is in terms of a set of raw speech signal values representative of speech

generated by the source before being distorted by the transmission channel (col. 11, ln. 11-17 and col. 15, ln. 6-25), wherein the apparatus further comprises second processing means for processing the received set of signal values with initial estimates of the first and second parameters, to generate an estimate of the raw speech signal values corresponding to the received set of audio signal values (col. 13, ln. 60 to col. 14, ln. 9) and wherein the applying means is operable to apply the estimated set of raw speech signal values to the function in addition to the set of received signal values (col. 15, ln. 6-25).

16. Regarding claims 14 and 36, Sewall et al. further disclose that the receiving means is operable to receive a sequence of sets of signal values representative of a speech signal generated by a speech source as distorted by the transmission channel (10 of figures 4-5 and col. 11, ln. 11-17) and wherein the processing means is operable to obtain values of the first parameters for the speech within each set of signal values in the sequence (figures 4-5).

17. Regarding claims 15 and 37, Sewall et al. further disclose that the processing means is operable to use the values of the first parameters obtained during the processing of a preceding set of signal values as initial estimates for the values of the first parameters for a current set of signal values being processed (col. 13, ln. 13-24 and col. 15, ln. 6-11).

18. Regarding claims 16 and 38, Sewall et al. further disclose a system that processes the sets of signal values in the sequence (col. 16, ln. 11-43 or figure 38), but fail to specifically disclose that the sets of signal values in the sequence are non-overlapping. However, it would have been obvious to one of ordinary skill in the art, at the time of invention, to incorporate non-overlapping frames into the modified Sewall et al. in order to reduce processing time and power.

19. Regarding claims 17 and 39, Sewall et al. further disclose that the processing means comprises means for varying the number of parameter values used to represent the speech signal within each set of signal values (col. 11, ln. 11-17, by controlling these parameters will vary the signal).

20. Regarding claims 20-22, and 42-44, Sewall et al. further disclose means for comparing determined parameter values with pre-stored parameter values or reference models to generate a comparison result (referring to figures 5-6, consulting with database 32), but fail to specifically disclose recognition means or speaker verification means. However, it would have been obvious to one of ordinary skill in the art at the time of invention to readily realize that the comparing method disclosed by Sewall et al. be used in both speech recognition and speaker verification systems to provide users both speech recognition and voice verification services.

21. Regarding claim 54, Sewall et al. further disclose a computer readable medium storing computer executable process steps to cause a programmable computer apparatus to perform the method of claim 23 (col. 16, ln. 44-67).

22. Regarding claim 55, Sewall et al. further disclose a processor implementable process steps for causing a programmable computing device to perform the method according to claim 23 (col. 16, ln. 44-67).

Claims 4 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sewall et al. (US Patent No. 6708146) in view of Pastor et al. (US Patent No. 6438513) and further in view of Komissarchik et al. (US Patent No. 5799276).

23. Regarding claims 4 and 26, the modified Sewall et al. fail to disclose that the processing means is operable to determine a histogram of drawn samples and wherein values of parameters are determined from the histogram. However, Komissarchik et al. teach that the processing means is operable to determine a histogram of drawn samples and wherein values of parameters are determined from the histogram (col. 14, ln. 6-17). The advantage of using the teaching of Komissarchik et al. in the modified ewall et al. is to determine the likelihood weights of input speech model to increase accuracy.

Since the modified Sewall et al. and Komissarchik et al. are analogous art because they are from the same field of endeavors, it would have been obvious

to one of ordinary skill in the art, at the time of invention, to further modify Sewall et al. by incorporating the teaching of Komissarchik et al. in order to determine the likelihood weights of input speech model to increase accuracy.

Claims 8 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sewall et al. (US Patent No. 6708146) in view of Pastor et al. (US Patent No. 6438513), and further in view of Lennon et al. (US Patent No. 5116090).

24. Regarding claims 8 and 30, the modified Sewall et al. fail to disclose that the processing means comprises a Gibbs sampler. However, Lennon et al. teach that the processing means comprises a Gibbs sampler (col. 12, ln. 18-41). The advantage of using the teaching of Lennon et al. in the modified Sewall et al. is to obtain the optimum region label configuration for the frame.

Since the modified Sewall et al. and Lennon et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art, at the time of invention, to further modify Sewall et al. by incorporating the teaching of Lennon et al. in order to obtain the optimum region label configuration for the frame.

Claims 5 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sewall et al. (US Patent No. 6708146) in view of Pastor et al.

(US Patent No. 6438513), further in view of Komissarchik et al. (US Patent No. 5799276), and further in view of Eatwell (US. Patent No. 5742694).

25. Regarding claims 5 and 27, Sewall et al. fail to disclose that the processing means is operable to determine values of parameters using a weighted sum of drawn samples, and wherein the weighting is determined from the histogram. However, Komissarchik et al. further teach that the weighting is determined form the histogram (col. 5, ln. 6-17). The advantage of using the teaching of Komissarchik et al. in Sewall et al. is to enhance the detection accuracy.

Since Sewall et al. and Komissarchik et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art, at the time of invention, to modify Sewall et al. by incorporating the teaching of Komissarchik et al. in order to enhance the recognition accuracy.

The modified Sewall et al. still fail to specifically disclose that the processing means is operable to determine values of parameters using a weighted sum of drawn samples. However, Eatwell teaches that the processing means is operable to determine values of parameters using a weighted sum of drawn samples (col. 5, ln. 1-10). The advantage of using the teaching of Eatwell in the modified Sewall et al. is to reduce noise in the signal.

Since the modified Sewall et al. and Eatwell are analogous art because they are from the same field of endeavors, it would have been obvious to one of

ordinary skill in the art, at the time of invention, to further modify Sewall et al. by incorporating the teaching of Eatwell in order to reduce noise in the signal.

Claims 12-13, 15, 18, 34-35, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sewall et al. (US Patent No. 6708146) in view of Pastor et al. (US Patent No. 6438513) and further in view of Burnett et al. (US Patent No. 6377919).

26. Regarding claims 12 and 34, the modified Sewall et al. fail to disclose that the second processing means comprises a simulation smoother. However, Burnett et al. teach that the second processing means comprises a simulation smoother (col. 4, ln. 4-12). The advantage of using the teaching of Burnett et al. in the modified Sewall et al. is to remove impulsive noise.

Since the modified Sewall et al. and Burnett et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art, at the time of invention, to modify further Sewall et al. incorporating the teaching of Burnett et al. in order to remove impulsive noise.

27. Regarding claims 15 and 35, the modified Sewall et al. fail to disclose that the second processing means comprises a Kalman filter. However, Burnett et al. teach that the second processing means comprises a Kalman filter (col. 4, ln. 1-15). The advantage of using the teaching of Burnett et al. in the modified Sewall

et al. is to remove signal that don't have expected behaviors in time or frequency domains to make the system more efficient.

Since the modified Sewall et al. and Burnett et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art, at the time of invention, to further modify Sewall et al. by incorporating the teaching of Burnett et al. in order to remove signal that don't have expected behaviors in time or frequency domains to make the system more efficient.

28. Regarding claims 18 and 40, the modified Sewall et al. fail to disclose that the first part is an auto-regressive model and the first parameters comprise auto-regressive model coefficients. However, Burnett et al. teach that the first part is an auto-regressive model and the first parameters comprise auto-regressive model coefficients (col. 11, ln. 1-3). The advantage of using the teaching of Burnett et al. in the modified Sewall et al. is to minimize the level of impulsive noise.

Since the modified Sewall et al. and Burnett et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art, at the time of invention, to further modify Sewall et al. by incorporating the teaching of Burnett et al. in order to minimize the level of impulsive noise.

Claims 19 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sewall et al. (US Patent No. 6708146) in view of Pastor et al. (US Patent No. 6438513), further in view of Burnett et al. (US Patent No. 6377919), and further in view of Cox (US. Patent No. 5884255).

29. Regarding claims 19 and 41, the modified Sewall et al. fail to disclose that the second part is a moving average model and the second parameters comprise moving average model coefficients. However, Cox teaches that the second part is a moving average model and the second parameters comprise moving average model coefficients (col. 2, ln. 36-50). The advantage of using the teaching of Cox in the modified Sewall et al. is to reduce the level of impulsive noise to enable the system to detect the presence of speech more accurately.

Since the modified Sewall et al. and Cox are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art, at the time of invention, to further modify Sewall et al. by incorporating the teaching of Cox in order to minimize the level of impulsive noise.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakatoh et al. (US Patent No. 5611019) teach a method and an apparatus for speech detection that is considered pertinent to the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huyen Vo whose telephone number is 703-305-8665. The examiner can normally be reached on M-F, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on 703-305-4827. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner Huyen X. Vo

March 29, 2004

4/2/04

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